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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/848,430	05/04/2001	Jeffrey Thomas Kreulen	ARC920000023US1	7814
21254	7590	08/06/2004	EXAMINER	
MCGINN & GIBB, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817			RIES, LAURIE ANNE	
			ART UNIT	PAPER NUMBER
			2176	

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/848,430	<b>Applicant(s)</b> KREULEN ET AL.	
	<b>Examiner</b> Laurie Ries	<b>Art Unit</b> 2176	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Specification***

The disclosure is objected to because of the following informalities:

- Page 2, line 7: “form” should read “from”
- Page 3, lines 16: the word “that” should be removed

Appropriate correction is required.

***Drawings***

The drawings are objected to under 37 CFR 1.83(a) because they fail to show that the next word is analyzed after a determination is made that all words in the document have not been considered, as described in the specification. (Refer to Figure 9 – element 906. If the decision is “No”, per the specification, the arrow should point back to element 903). Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional

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replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 5, 9, 13 and 15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As per claim 13, the claimed invention is not tangibly embodied in a computer readable/executable medium because a "program of machine-readable instructions executable by a digital processing apparatus" does not constitute a tangible medium.

As per claims 1, 5, 9 and 15, the language of the claims raise a question as to whether the claims are directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 5, 7, 9, 11, 13, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gruenwald in further view of Kojima and Modha.

As per claims 1, 5, 9, 13 and 15, Gruenwald discloses a system, apparatus, data conversion process and method for converting a document or data collection into an ordered, compact representation of occurrences in which a second vector is developed that indicates the location of the document or data in a first vector. (See Gruenwald, Column 17, lines 25-38). Gruenwald does not disclose expressly that the first vector represents a document corpus as a listing of unique integers corresponding to dictionary terms such that each document in the corpus is sequentially represented. Modha discloses the development of a word dictionary. (See Modha, page 2 paragraph 0034). Kojima discloses a first vector which is a listing of unique integers corresponding to the sequentially listed values in the collection. (See Kojima, Column 26, lines 58-67, and Column 27, lines 1-9). Gruenwald, Modha, and Kojima are analogous art because they are from the same field of endeavor of organizing data. At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine the dictionary terms of Modha with the first vector of Kojima. The

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motivation for doing so would have been to efficiently store a listing of key words appearing in documents. (See Modha, Page 2, paragraph 0034). Also, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the first vector of Kojima and Modha representing the terms in the dictionary with the second vector of Gruenwald representing the location of each document in the collection. The motivation for doing so would have been to sort the values thereby simplifying the process of adding values into the vector at a later time. (See Gruenwald, Column 17, lines 25-31). Therefore, it would have been obvious to combine Gruenwald, Kojima and Modha for the benefit of improved data storage and manipulation to obtain the invention as specified in claims 1, 5, 9, 13 and 15.

As per claims 3, 7, 11, and 17, Gruenwald, Kojima and Modha disclose the limitations of claims 1, 5, 9, and 15 as described above. Kojima also discloses rearranging in the first vector the order of unique integers so that all identical unique integers are adjacent. (See Kojima, Column 22, lines 34-47). Gruenwald, Modha, and Kojima are analogous art because they are from the same field of endeavor of organizing data. At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine the ordering of unique integers in the first vector of Kojima with the system and method of Gruenwald, Kojima and Modha. The motivation for doing so would have been to reduce the number of duplicate values to be considered in the resulting calculations. (See Kojima, Column 22, lines 42-47). Therefore, it would have been obvious to combine Gruenwald, Kojima and Modha for the benefit of

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improved data storage and manipulation to obtain the invention as specified in claims 3, 7, 11 and 17.

Claims 2, 6, 10, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gruenwald, Kojima and Modha as applied to claims 1, 5, 9, 13, and 15 above, and further in view of Turtle.

As per claims 2, 6, 10, 14 and 16, Gruenwald, Kojima and Modha disclose the limitations of claims 1, 5, 9, 13 and 15 as described above. Gruenwald, Kojima and Modha do not disclose expressly that a third vector is developed for the corpus which includes a sequential listing of floating point multipliers each representing a normalization factor. Turtle discloses a vector in which the normalization factor is evaluated based upon the number of multiple occurrences of words or terms. (See Turtle, Column 13, lines 25-36). Gruenwald, Kojima, Modha and Turtle are analogous art because they are from the same field of endeavor of organizing data. At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine the third vector of Turtle with the system and method of Gruenwald, Kojima and Modha. The motivation for doing so would have been to simplify the representation of duplicate terms in the document corpus. (See Turtle, Column 13, lines 34-36). Therefore, it would have been obvious to combine Turtle with Gruenwald, Kojima and Modha for the benefit of efficient representation of duplicate data to obtain the invention as specified in claims 2, 6, 10, 14 and 16.



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Claims 4, 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gruenwald, Kojima, Modha and Turtle as applied to claims 2, 6 and 10 above, and further in view of Spencer.

As per claims 4, 8, and 12, Gruenwald, Kojima, Modha and Turtle disclose the limitations of claims 2, 6 and 10 as described above. Gruenwald, Kojima, Modha and Turtle do not disclose expressly that a normalization factor is calculated which is the reciprocal of the square root of the sum of squares of all term occurrences in the document. Spencer discloses that a normalization factor for the number of term occurrences is calculated by taking the square root, or reciprocal, of the total value of the summation of term occurrences squared. (See Spencer, Column 3, lines 60-67). Gruenwald, Kojima, Modha, Turtle and Spencer are analogous art because they are from the same field of endeavor of organizing data. At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine the normalization factor of Spencer with the system and method of Gruenwald, Kojima, Modha and Turtle. The motivation for doing so would have been to reduce the error factor generated when determining the rate of occurrence of terms within a document. (See Spencer, Column 3, lines 32-40). Therefore, it would have been obvious to combine Spencer with Gruenwald, Kojima, Modha and Turtle for the benefit of reducing the rate of error produced during the calculation of the normalization factor to obtain the invention as specified in claims 4, 8 and 12.

### ***Conclusion***

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Min (U.S. Patent 6,633,868) discloses a system and method for improved searching through the use of contextual information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laurie Ries whose telephone number is 703-605-1238. The examiner can normally be reached on Monday-Friday from 7:00am to 3:30pm.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LAR

  
JOSEPH FEILD  
SUPERVISORY PATENT EXAMINER